Remarks

Examiner rejects claims 5, and 19 to 20 under 35 U.S.C. §112 as being indefinite. In response, applicants have canceled claim 5 and amended claim 19 to depend upon claim 1 and trust that these rejections have now been overcome.

The Examiner maintains the rejection of all currently pending claims, except for claim 15 and 19 to 20, under 35 U.S.C. §103(a) as being unpatentable over Darcie et al (US patent 6,493,335) in view of Ota (US patent 5,282,257) and Ota (US patent 5,915,054). Applicants offer no amendments of the claims in respect of this rejection, since they believe that the present invention is non-obvious over the suggested combination for the following reasons. The Examiner is kindly requested to consider the following submissions carefully, as they contain additional arguments over and above those presented in previous responses.

The Examiner's rejection may be summarized as follows: Darcie teaches all of the features of the rejected claims save for the feature that the passive optical network provides no optical connectivity from each of the subscriber stations back to itself. Ota '257 teaches a star coupler arranged to provide no optical connectivity from a node back to itself, and Ota '054 provides the suggestion that such a star coupler would simplify collision detection. Thus, the Examiner argues that one of ordinary skill in the art would be motivated to combine the three references to arrive at the claims of the present invention. Applicants respectfully disagree for the following reasons:-

Firstly, applicants submit that the suggestion provided in Ota '054 is more limited than the Examiner argues. The Examiner will appreciate that Ota '257 describes a so-called "interconnectable star coupler" (see column 1, lines 7-9) and addresses the problem that networks cannot be easily expanded by connecting a plurality of star couplers because "interconnection between star couplers results in forming a closed loop within the transmission path and this causes phenomenas such as oscillation and attenuating vibration" (column 2, lines 16-19). The Examiner is further referred to the passage at column 2, lines 20-43 and figures 33 and 34 which describe the formation of a closed loop when a plurality of conventional star couplers are connected. To solve the above problem, the invention of Ota '257 teaches a star coupler in which the transferred coefficient between a

pair of input and output terminals of a node is set to zero. "This allows a plurality of star couplers to be interconnected from one to another for network expansion" (see column 2, lines 64-66). There is no suggestion in Ota '257 to use such a star coupler other than for the purpose of allowing network expansion through interconnection of multiple star couplers.

Applicants further submit that Ota '054 adds no further level of generality to the teaching of Ota '257. When referencing the Japanese patent application corresponding to Ota '257 (column 3, lines 4-37), Ota '054 again clearly addresses the problem of network expansion. The passage begins "to solve such a problem that the number of nodes that can be connected to the network is limited ... the transferred coefficient of the signal transferred between a pair of input and output terminals of a node is set to zero, so that no feedback loop is formed when plural star couplers are combined" (emphasis added). Thus, again, the suggestion is to use the star coupler of Ota '257 for network expansion.

Applicants accept that Ota '054 teaches that "the collision detecting mechanism can readily be realized in a manner that a receiving port is constantly monitored in a transmission mode, and if a signal is detected at the receiving port, it is determined that a collision has occurred" (column 3, lines 17-21). However, applicants submit that one of ordinary skill in the art would not be motivated to modify the teaching of Darcie in accordance with this suggestion since it is incompatible and in fact teaches away from the approach taken in Darcie. This is for the following reasons:

Each of the embodiments of Darcie shares the common feature that intermediate nodes receive upstream signals from end users, derive traffic information signals from the upstream signals, and transmit the traffic information signals back to the end users. By listening to the traffic information signals from the intermediate node, the end users know whether the upstream transmission channels are idle or busy, or whether a collision has occurred (see Abstract). In the first embodiment of Darcie (described at column 5, line 25 to column 6, line 3) a simple loop-back arrangement is used (see column 5, lines 34 to 40). End user will listen to the downstream signaling channel and "while transmitting it will compare the received data in the signaling channel with its transmitted data. If the data are the same, no collision occurs. Otherwise, a collision is assumed ..." (column 5, lines 45-48).

The second embodiment of Darcie describes the use of a more complex traffic information signal which may be an RF tone. Again, this signal is looped back to the transmitting end user which detects collision according to information contained in the traffic information signal (see column 6, lines 4-60). The third and further embodiments of the invention of Darcie describe more complex traffic information signals in which the end user will send its address upstream before sending any data. The intermediate node then loops that address-signaling downstream to all end users. "If the transmitting end user gets its address back without error, no collision occurs .... Otherwise the distorted address information indicates collision ..." (see column 7, lines 4-15).

Thus, in all embodiments of Darcie, there is a clear requirement that end user stations receive a looped back traffic information signal derived from the signal they transmit upstream. Applicants submit that this is clearly incompatible with the teaching of Ota '257 and Ota '054 in which no optical loop back is provided from a node to itself and in which a collision is determined if any signal is detected at the receiving port.

For these reasons, it is submitted that one of ordinary skill in the art, without the hindsight benefit of the present application, would not be motivated to combine the cited references for reasons of incompatibility.

The Examiner rejects claims 15, and 19 to 20 further in view of Kavehrad (US patent 4,701,909) and Coden (US patent 5,109,448) respectively. Applicants submit that these rejections are moot in view of the above arguments.

Accordingly, applicants believe that the present invention is in condition for allowance and respectfully request favorable reconsideration.

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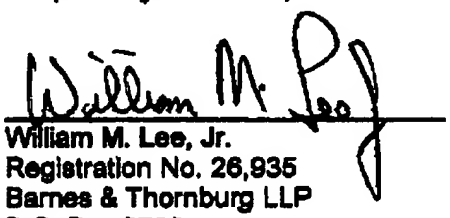
Respectfully submitted,



William M. Lee, Jr.
Registration No. 26,935
Barnes & Thornburg LLP
P.O. Box 2786
Chicago, Illinois 60690-2786
(312) 214-4800
(312) 759-5646 (fax)